UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Offic
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	F	ATTORNEY DOCKET NO.
09/508,570	05/23/00	ARMIN J		

HM22/0620,

MCDONNELL BOEHNEN HULBERT & BERGHOFF
300 SOUTH WACKER DRIVE
CHICAGO IL 60606

EXAMINER	
BROWN	

ART UNIT	PAPER NUMBER
	6

DATE MAILED: 06/27/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary	Application No.	Applicant(s)	
	09/508,570	ARMINJON ET AL.	
	Examiner	Art Unit	
	Stacy S Brown	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-38* is/are rejected.

7)☒ Claim(s) *34* is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

1. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to **Group Art Unit 1648. Your application has been reassigned to examiner Stacy Brown.**

2. Applicant's amendments to the claims are acknowledged and entered. Claims 1-20 have been cancelled and new claims 21-38 have been added. Claims 21-38 are pending and examined.

Claim Objections

3. Claim 34 is objected to because of the following informalities: the claim depends improperly from claim 10, which is cancelled. The examiner will interpret the claim to depend from claim 30. (Applicant is invited to point out the difference between claims 34-35, which appear to be duplicative, since the only difference is that claim 34 cites 0.306 mg aluminum salt and claim 35 cites 0.356 mg aluminum salt. The examiner is attributing the difference to be a typo.) Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 34-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims depend from claims 30 and 21; claims 34-38 cite hepatitis B surface

antigen. However, claims 21 and 30 do not cite hepatitis B surface antigen in the method of making the vaccine. It is not clear why the vaccine of claims 34-35 contain hepatitis B surface antigen, considering the method of making the vaccines (claim 21) does not include hepatitis B surface antigen. Claims 36-38 are drawn to a method of conferring protection and immunizing a host against Hepatitis B virus, with a vaccine that does not contain hepatitis B surface antigen. It is not clear why Hepatitis B virus is protected against when the vaccine does not contain any Hepatitis B antigen. Clarification is required to overcome this rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gold et al (Safety and immunogenicity of *Haemophilus influenzae* vaccine (tetanus toxoid conjugate)

administered concurrently or combined with diphtheria and tetanus toxoids, pertussis vaccine and inactivated poliomyelitis vaccine to healthy infants at two, four and six months of age, *Ped. Infect. Dis. J.*, 1994, Vol. 13, pages 348-355) in view of Petre et al (WO 93/24148).

a) *Claims 21-25* are drawn to a method of preparing a multi-component vaccine comprising pertussis toxoid and filamentous hemagglutinin in purified form, tetanus toxoid, diphtheria toxoid, inactivated polio virus, and a conjugate of a carrier molecule selected from tetanus toxoid and diphtheria toxoid and a capsular polysaccharide of *Haemophilus influenzae* type B. The pertussis toxoid and filamentous hemagglutinin are adsorbed onto an aluminum salt before being mixed with other components, wherein the aluminum salt is aluminum hydroxide (AH) or aluminum phosphate (AP). Additionally, hepatitis B surface antigen is added to the vaccine after being adsorbed onto an aluminum salt. *Claims 26-27* are drawn to a specific order of combining the vaccine components. *Claims 28-29* are drawn to the preparation of H. influenzae in a phosphate buffer solution and the method of delivery of the components.

Gold et al teach a vaccine comprising pertussis toxoid, tetanus toxoid, diphtheria toxoid, inactivated poliomyelitis, and *H. influenzae* (tetanus toxoid conjugate). **Gold et al do not specifically teach the method of making the vaccine** wherein the tetanus and diphtheria toxoids are adsorbed onto an aluminum salt before being mixed with other components, nor the specific order of mixing the components.

Petre et al teach methods of making combined vaccines comprising Hepatitis B surface antigens in combination with pertussis toxoid, tetanus toxoid, diphtheria toxoid, inactivated polio virus and *H. influenzae* type B, see example 4 and claim 6. **Petre et al also disclose that after adsorption of the components onto AH or AP the components are combined**, see page 9,

lines 1-3. Also taught is the adsorption of hepatitis B surface antigen on aluminium phosphate prior to being added to the other components, see example 1 and page 9, lines 5-8. Example 4 teaches the formulation of a diphtheria-tetanus-pertussis vaccine. First, diphtheria toxoid and tetanus toxoid were adsorbed to aluminium hydroxide. Then pertussis toxin and filamentous hemagglutinin were combined with AH or AP, and finally added to diphtheria and tetanus toxoids. Page 4, lines 15-24 disclose formulations of vaccine containing inactivated polio vaccine and *H. influenzae* type B. One of skill in the art would know how to prepare *H. influenzae* type B. One of skill would also know that an optional method of administration of multi-valent vaccines is with a dual chamber syringe for purposes of maintaining optimal conditions for separate components.

It would have been obvious to one of ordinary skill in the art to use the method of Petre et al to make the vaccine of Gold et al because Petre et al teach an improvement over the art in that "the advantage of the invention is that no substantial decrease in the immunogenicity of the HBsAg occurs in the combined vaccine formualtion", see page 2, lines 23-24. In other words, the HBsAg is an added feature to the vaccine of Gold et al. One would have been motivated to use the method of Petre et al to make the vaccine of Gold et al given that the only difference in the resulting vaccines is the presence or absence of one type of antigen in a *multi-valent* vaccine. One would have had a reasonable expectation of success because multi-valent vaccines are well known in the art.

b) *Claims 30-35* are drawn to a multi-component vaccine with various specified amounts of components. *Claims 36-38* are drawn to a method of conferring protection and immunizing a host (human), more specifically an infant against *Bordetalla pertussis, Clostridium*

tetanii, Corynebacterium diphtheria, Haemophilus influenzae, poliovirus and/or *Hepatitis B* virus.

Gold et al in view of Petre et al teach a vaccine as described above which is protective against the previously mentioned diseases in infants. Gold et al disclose the components of their vaccine on page 349, first column: 25 Lf diphtheria toxoid; 5 Lf tetanus toxoid; 4 to 12 protective units of pertussis vaccine; 40, 8 and 32 D antigen units of types 1, 2, and 3 of IPV; and 10 micrograms of H. influenzae type B covalently linked to 20 micrograms of tetanus toxoid. Petre et al also teach the amounts of components in examples 1-5. Gold et al does not teach the amounts of phosphates, carbonates, Tris buffer or aluminum salt however, one of skill in the art would know how to prepare and adjust amounts of adjuvants and buffers.

Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

6. No claim is allowed.

Papers relating to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 located in Crystal Mall 1. The Fax number for Art Unit 1648 is (703) 308-4426. All Group 1600 Fax machines will be available to receive transmissions 24 hrs/day, 7 days/wk. Please note that the faxing of such papers must conform with the Notice published in the Official Gazette, 1096 OG 30, (November 15, 1989).

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stacy S. Brown, whose telephone number is (703) 308-2361.

The Examiner can normally be reached on Monday through Friday from 7:30 AM-4:00 PM, (EST). If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, James C. Housel, can be reached at (703) 308-4027. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Stacy S. Brown
June 15, 2001

HANKYEL T. PARK, PH.D
PRIMARY EXAMINER